THIN SECTION LABEL ID: Observer: Thin section summary:	368-U1502A-25R-5-W 35/37-F KAD Foraminifer tests in a matrix of Most foraminifers are plankton foraminifer tests. Foraminifers	Thin section no.: Unit/subunit: Icite (maybe more ere are many parti	21 IC nannos). al	
Plane-p	olarized: 41556771	Cross-polarized: 415567	91	



Sediments and Sedimentary Rock

Sample domain name:

Domain rel. abundance:

Lithology:	foraminifer rich nannofossil ooze

TEXTURE	Percent	CONSTITUENT	Percent	GRAIN ROUNDNESS	
Gravel texture		Siliciclastics		Mineral grains	
Sand texture	30	Detrital carbonate			
Silt texture		Biogenic carbonate	100		
Clay texture	70	Biogenic silica			

Framework grain abundance

D=dominant; A=abundant; C=common; R=rare; Tr=trace

Component	Rel. abundance	Component	Rel. abundance
Quartz		Calcite (allogenic)	
Feldspar		Mica	
Clay minerals		Glauconite	
Lithic grains		Foraminifera	A
Chert		Undifferentiated calcareous bioclasts	

THIN SECTION LABEL ID: 368-U1502A-40R-1-W 0/3-TSB-TS23 Observer: KAD/FMZ Thin section summary: Matrix-supported breccia, with 80% siliciclastic Larger fragments (probably altered igneous) or the section summary of the section section summary of the section sec

Thin section no.: 23

Unit/subunit: IV

Matrix-supported breccia, with 80% siliciclastic material and 20% biogenic carbonate. Larger fragments (probably altered igneous) consist of clay and sheet silicates, e.g., epidote, Fe hydroxides, and potentially chlorite.

Cross-polarized: 41571121



Sediments and Sedimentary Rock

Sample domain name:

Domain rel. abundance:

Lithology: matrix-supported breccia

TEXTURE	Percent	CONSTITUENT	Percent	GRAIN ROUNDNESS	
Gravel texture	30	Siliciclastics	80	Mineral grains	
Sand texture	20	Detrital carbonate			
Silt texture	10	Biogenic carbonate	20		
Clay texture	40	Biogenic silica			

Framework grain abundance

D=dominant; A=abundant; C=common; R=rare; Tr=trace

Component	Rel. abundance	Component	Rel. abundance
Quartz	R	Calcite (allogenic)	С
Feldspar		Mica	
Clay minerals	A	Glauconite	
Lithic grains	A	Foraminifera	
Chert		Undifferentiated calcareous bioclasts	

THIN SECTIC Observer	ON LABI :	EL ID:	368- FMZ	U1502 /RMK	A-40R-CC-P	AL(23	-28)-TSE	3-TS22	Thi	n section no.:	22 V
Thin sect	ion surr	nmary:	Fine cong	-graine lomera	ed dolomite m ates. Equigra	arble nular a	with calci annealing	te enclave and r texture.	magnet	ite bands and	v
		Plane	-polarize	ed: 41	717861			Cross-polari	zed: 4	1717881	
				-	368 T5#22 U1582A 48R-CC PAL 23-28				4	404 154 U1582 407-62 ** 23-29	
	52	22	+.20		10AL						
Metamorp	hic Pe	etrol	ogy								
Domain no.:			1				Domain	relative abundar	nce (%):	100	
Lithology:			dolomi	te mark	ole		Contact	Туре:		chilled contac	t
Texture:annealingGrain Size Distibution				ze Distibution:		equigranular					
Texture Com	nent:		Clear tr	iple jun	ctions betwee	en the	grains				
Mineral	Pressent (%)	Size min. (mm)	Size Max (mm)	Size Mode (mm)	Shape	Habit		Comments			

granular

granular

equant

Magnetite (cubic shape and high magnetic susceptibility of the unit)

Calcite

Dolomite

Oxides

2

95

3

0.02

0.01

0.01

0.05

0.04

0.025

0.04

0.03

0.015

anhedral

anhedral

subhedral

THIN SECTION LABEL ID Observer:	: 368-U1502A-41R-1-W 1/ 4 RMK	4-TSB-TS24	Thin section no.: 24						
			Unit/subunit: V						
Thin section summary: Variably hydrothermally altered fine-grained meta-claystone. Less altered domains preserve primary clay assemblage, whereas highly altered domains might be addres as a chlorite-epidote-schist. Epidote occurs in the form of porphyroblasts and veins.									
Plan	e-polarized: 41582511	Ci	ross-polarized: 41582531						
	368 TS#24 U1582A 41R-1 1-4								
Veins and Halos									
Vein type:	Vein boun	dary: sharp b	ooundary or contact						
Avg. thickness (cm): 0.0	0.003 Vein texture:								
	Vein fill composition	Percentage							
	Epidote	100							

THIN SECTION LABEL ID:	368-U1502A-41R-1-W 1/4-TSB-TS24	Thin section no.:	24
Observer:	RMK	Unit/subunit:	V
Thin section summary:	Variably hydrothermally altered fine-grained meta-clays preserve primary clay assemblage, whereas highly alter as a chlorite-epidote-schist. Epidote occurs in the form	stone. Less altered do red domains might be of porphyroblasts and	omains e addressed d veins.





Sediments and Sedimentary Rock

Sample domain name:

Domain rel. abundance:

Lithology:

meta claystone

Framework grain abundance

D=dominant; A=abundant; C=common; R=rare; Tr=trace

Component	Rel. abundance	Component	Rel. abundance
Quartz		Calcite (allogenic)	
Feldspar		Mica	
Clay minerals	A	Glauconite	
Lithic grains		Foraminifera	
Chert		Undifferentiated calcareous bioclasts	

THIN SECTION LABEL ID: Observer:	368-U1502A-41R-1-W 88/90-TSB FMZ/DWP/GM	TS25 Thin section no.: 25	
		Unit/subunit: 2a	
Thin section summary:	Highly altered (hydrothermal?) bas plagioclase (sericitized), subequan (partly replaced by Fe hydroxides) consist of 30% colourless-greenish with fibrous minerals).	alt. Fine-grained inequigranular texture with eld t pyroxene (altered to phyllosilicates), Fe-Ti ox and mesostasis (completely altered groundma minerals with high interference colours, and ve	ongate ides ss eins
Plane-p	olarized: 41717821	Cross-polarized: 41717841	



Igneous Petrology

Litho	ology:	basalt					Groundmass grain size (avg.): fine-grained			
Text	ure:	intergranular					Grain size distribution:			
Ground	dmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioc	lase	45	5	40	0.05	1.5	subhedral	elongate	Hlghly altered. Rare carlsbad-twinning. Little undolose extinction.	
Clinopy	yroxene	35	1	34	0.05	0.3	subhedral	subequant		
Fe-Ti o	xide	5	4	1	0.02	0.1	subhedral	subequant	oxidized	

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THIN SECTION LABEL ID: Observer:	368-U1502A-41R-2-W 42/44 DWP/FMZ	-TSB-TS26	Thin section no.:	26	
			Unit/subunit:	2a	
Thin section summary:	Thin section summary: Highly altered (hydrothermal?) moderately vesicular be texture with elongate plagioclase (sericitized), subeque phyllosilicates) and Fe-Ti oxides (partly hydroxized). V minerals.				
Plane-p	polarized: 41556621	Cross-polarized	: 41556641		
	368 TS#26 U1502A 41R-2 42-44		368 TS# U1582/ 41R-2 42-44		

Igneous P	etrolo	gy							
Lithology:	basalt						Groundmass g	rain size (avg.):	fine-grained
Texture:	intergranular						Grain size distr	ibution:	inequigranular
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	55	15	40	0.05	0.7	subhedral	elongate	Highly altered. Litt carlsbad twins.	tle undulose extinction. Common
Clinopyroxene	40	5	35	0.05	0.3	subhedral	subequant		
Fe-Ti oxide	5	4	1	0.02	0.1	subhedral	subequant	oxidized	

 THIN SECTION LABEL ID:
 368-U1502A-41R-CC-PAL(18-23)-TSB-TS27
 Thin section no.: 27

 Observer:
 FMZ/RMK/DWP
 Unit/subunit: 2a

 Thin section summary:
 Highly altered (hydrothermal?) basalt. Fine-grained inequigranular texture with elongate plagioclase (sericitized), subequant pyroxene (altered to sheet-silicates) and Fe-Ti oxides (partly replaced by Fe hydroxides).

 Plane-polarized:
 41556661
 Cross-polarized:

 415.02 PAL
 118-23
 118-23

 18-23
 118-23
 118-23

Igneous Pe	etrolo	gy							
Lithology:		ba	asalt				Groundmass gra	ain size (avg.):	fine-grained
Texture:	intergranular						Grain size distril	oution:	inequigranular
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	55	15	40	0.05	2.5	subhedral	elongate	highly altered (ser extinction. Commo twins.	iticized). Common undulose on Carlsbad twins, rare albite
Clinopyroxene	35	5	30	0.05	0.3	subhedral	subequant		
Fe-Ti oxide	10	5	5	0.02	0.1	subhedral	subequant	oxidized	

THIN SECTION LABEL ID: Observer:	368-U1502B-2R-1-W 32/34-TSB-TS28 SMS, RMK, FMZ, KAD	Thin section no.:	28
		Unit/subunit:	II/1
Thin section summary:	Sparsely plagioclase phyric fine-grained basalt. Highly al (Czo?) are common as matrix components and sometime with Czo rims. Plagioclase only recognizable phenocryst. tightly interwoven plagioclase laths. Plagioclase may be p space taken up secondary mineral (clay? zeolites Fe-(hy- groundmass show quench textures. Possible pseudomor brown clay minerals.	tered. Epidote grou es occur as subhed Groundmass domi partially replaced. Ir dr)oxides). Plagiocl phs after olivine tha	p minerals ral allanite nated by nterstitial ase in the at are now



Igneous Petrology

Lithology:	sparsely plagioclase phyric basalt					yric basalt	Groundmass g	grain size (avg.):	fine-grained
Texture:	interstitial						Grain size dist	ribution:	inequigranular
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	2	0.1	1.9	1.3	6	euhedral	tabular	twinned, needly p interwoven; plagi phenocrysts may or possibly alterat	plagioclase laths tightly oclase always altered; plagioclase be broken out due to preparation tion
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	50	40	10	0.1	1	euhedral	elongate	twinned, needly p interwoven; plagi	olagioclase laths tightly oclase always altered
Fe-Ti oxide	10	5	5	0.005	0.02	subhedral	subequant		

Alteration

Alteration	intensit	v:	hiah
/	meenore	<i>,</i> .	

high To

Total alteration (%): 50 Domain ID (if >1):

Alteration mineral Percent Comments Clay, other 45 possible from hyaline groundmass; Non-plagioclase matrix components seem to largely be replaced by epidote group 10 Epidote minerals (Czo?). Larger subhedral allanite porphyroblasts show clinozoisite rims. 5 Oxide, other present in interstitial spaces, not clear whether entirely secondary radially filling in pore space, which may be primary (vesicles?) or may have created by Zeolite alteration

THIN SECTION LABEL ID: Observer:	368-U1502B-2R-1-W 54/56- SMS, RMK	rsb-ts29	Thin section no.	: 29
			Unit/subunit:	III
Thin section summary:	Highly silicified tectonic breco distribution largely thermally possibly nannofossil-rich clay outlining foraminifera tests. P	tia. Cataclastic quartz mi overprinted under static of with foraminifera. Secon ervasively silicified and e	crostructure with fract conditions (annealed). ndary Fe-hydroxide po extensive Fe-hydroxid	al grain size Protolith ssibly e staining.
Plane-p	oolarized: 41656821	Cross-pola	arized: 41656841	
	368 TS#29 U1502B 2R-1 54-57		368 TS#2 U15820 2R-1 54-57	q

 THIN SECTION LABEL ID:
 368-U1502B-3R-2-W 102/105-TSB-TS30
 Thin section no.: 30

 Observer:
 SMS, RMK, FMZ
 Unit/subunit:
 V

 Thin section summary:
 Dolomite. Equigranular, recrystallized. Some secondary epidote group minerals (czo or allanite?), Fe-oxides (probably magnetite due to high magnetic susceptibility), and zeolites(?) along fractures

 Plane-polarized:
 41656861
 Cross-polarized:
 41656881

 Image: Solution of the second second

Sediments and Sedimentary Rock

dolomite

Sample domain name:

Domain rel. abundance:

Lithology:

368-U1502B-3R-2-W 102/105-TSB-TS30 Page 1 of 1

THIN SECTION LABEL ID:	368-U1502B-4R-2-W 18/21-TSB-TS31	Thin section no.:	31
Observer:	SMS, RMK, FMZ		
		Unit/subunit:	Vlb/2a
Thin section summary:	Sparsely plagioclase phyric fine-grained basalt. Highly all recognizable phenocryst. Groundmass dominated by tigh with quench textures. Plagioclase is partially replaced by space taken up secondary minerals (dolomite, zeolites, c dolomite, epidote, zeolites and secondary plagioclase. Di	ered. Plagioclase o tly interwoven plagi dolomite and zeolit lay?, epidote). Vein ffuse Fe-hydroxide	nly oclase laths e. Interstitial s filled by halos.



Igneous Petrology

Lithology:	sparsely plagioclase phyric basalt						Gr	oundmass gra	in size (avg.):	fine-grained
Texture:	interstitial						Gr	ain size distrib	oution:	inequigranular
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	2	0.2	1.8	0.8	1.5	euhedral		subequant	Carlsbad twinning	common, rare albite twins
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	50	20	30	0.1	0.5	euhedral		elongate	twinned, needly pl interwoven; plagic	lagioclase laths tightly oclase always altered
Fe-Ti oxide	5	2	3	0.01	0.1	subhedral		equant		

Alteration

Alteration intensity: high

Total alteration (%): 70

Domain ID (if >1):

Alteration mineral	Percent	Comments
Calcium carbonate	10	probably mostly dolomite, veins and pore space fillings
Clay, other	30	
Epidote	0.1	just one grain
Oxide, other	5	
Zeolite	5	vesicles fillings, in groundmass

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THIN SECTION LABEL ID: Observer:	368-U1502B-5R-CC-W 29/34- RMK, GM	TSB-TS32	Thin section no.	: 32
			Unit/subunit:	VIb/2a
Thin section summary:	Ily altered basalt clasts sh of strongly altered plagio nd plagioclase phenocrys f euhedral dolomite crysta and other accessory alter	now a low-grade fac clase into sericite a sts and cross-cutting als, calcite, epidote ation minerals such	ties mineral nd epidote g dolomite , Fe- n as clay.	
Plane-p	oolarized: 41656941	Cross-polari	zed: 41656961	

Igneous Petrolo Lithology: Texture:	gy basa porp	Itic breccia Groundmass grain size (avg.): fine-grained phyritic Grain size distribution: bimodal	fine-grained bimodal	
Alteration Alteration intensity:	high	Total alteration (%): 80 Domain ID (if >1): clast		
Alteration mineral Epidote	Percent 50	Comments		

radially filling of 'hole', which may be primary (vesicles?)

30

Zeolite

THIN SECTION LABEL ID: Observer:	368-U1502B-6R-1-W 2/4-TS SMS, FMZ, KAD	3-TS34	Thin section no.:	34		
			Unit/subunit:	Vlb/2a		
Thin section summary:	Brecciated basalt with dolomite and zeolite veins. Basalts 'clasts' are sparsely plagioclase phyric fine-grained basalt with quench textures. Highly altered. Plagio only recognizable phenocryst. Groundmass dominated by tightly interwoven plagi laths. Plagioclase is partially replaced by dolomite, zeolite, epidote. Interstitial spa filled with secondary minerals (dolomite, zeolites, clay?). Veins filled by dolomite, epidote. zeolites and secondary plagioclase.					
Plane-p	olarized: 41660711	Cross-polarize	d: 41660731			



brecciated basalt

Igneous Petrology

Lithology: Texture: Groundmass grain size (avg.):

Grain size distribution:

Igneous Petrology

Lithology:	basalt					Groundmass grain size (avg.): fi			fine-grained
Texture:	interstitial					Grain size distribution: equigranular			equigranular
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	60	30	30	0.02	0.7	subhedral	elongate	abundant twinning	, common undulose extinction
Fe-Ti oxide	10	8	2	0.01	0.05	subhedral	equant		

Alteration								
Alteration intensity:	high	Total alteration (%): 80 Domain ID (if >1): clast						
Alteration mineral	Percent	Comments						
Clay, other	50	most of groundmass altered to clay						
Epidote	20	Large part of matrix replaced by green/yellow minerals with high (yellow-pink-blue) interference colour: epidote group minerals.						
Zeolite	1	radially filling of 'hole', which may be primary (vesicles?)						

Alteration									
Alteration intensity:	complete	Total alteration (%): 80 Domain ID (if >1): groundmass							
Alteration domain comment:	brecciated matrix filled by dolomite, epidote, zeolites and secondary plagioclase.								
Alteration mineral	Percent	Comments							
Calcium carbonate	60	probably mostly dolomite, veins and pore space fillings							
Clay, other	30								
Epidote	1								

te U1502 core de	scriptio	ns									Thin section
THIN SECTION Observer:	N LABE	EL ID:	368-U SMS,	1502B FMZ, k	-6 R-2- \ (AD	W 93/95-TS	SB-TS	S33	Tł	nin section no.:	33
			,	,					Uı	nit/subunit:	Vlb/2a
Thin sectio	Basalt breccia with dolomite and clay minerals. Residual basalt 'clasts' are s microcrystalline to porphyritic, in various stages of alteration, from at least pa altered phenocrysts until nearly completed replaced by secondary minerals; in brecciated mixture of fine-grained phenocrysts and smaller basaltic clasts partially transformed to clays?, mostly completely overprinted by dolomite, c secondary albite?, clay minerals?, quartz? traces of epidote. Some clasts of grained silty claystone.										ubangular, artially embedded , that are alcite, very fine-
	I	Plane-po	olarizec	1: 416	78481			Cros	ss-polarized:	41678501	
U15828 6R-2 93-95											
Igneous Pe	trolo	gy					-		, 、		
Lithology:		br	recciate	d basal	t		Grou	undmass gra	in size (avg.):		
Texture:							Grai	n size distrib	ution:		
Igneous Pe Lithology:	trolo	gy sp	parsely p	olagioc	lase phy	yric basalt	Grou	undmass gra	in size (avg.):	fine-grained	
Texture:		ро	orphyrit	ic			Grai	n size distrib	ution:	inequigranula	r
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Ha	abit	Comments		
Plagioclase	2	0.5	1.5	0.6	5	euhedral	ta	bular	common twins an	d undulose extinctio	on
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Ha	abit	Comments		
Plagioclase	60	20	40	0.2	0.7	euhedral	elo	ongate	common Carlsbac	I twins, some undulo	ose extinction
Fe-Ti oxide	5	0	5	0.01	0.1	subhedral	eq	quant	replaced by Fe-hy	droxides	

Alteration				
Alteration intensity:	complete	Total alteration (%): 8	30 Domain ID (if >1):	groundmass
Alteration domain comment:	brecciated part dolomite/calcit hydroxides.	, transformed to claystor e (in nodule form), secor	ne? and mostly completely ov ndary albite?, clay minerals?, o	verprinted by quartz? traces of epidote,

Alteration mineral	Percent	Comments			
Calcium carbonate	30	robably mostly dolomite, veins and pore space fillings			
Clay, other	60	most of groundmass altered to clay			
FeOOH	2	most of groundmass altered to clay			

Alteration

Alteration intensity:	high	Total alteration (%): 80 Domain ID (if >1): clast						
Alteration mineral	Percent	Comments						
FeOOH	5	n interstitial space, probably replacing Fe-oxides						
Zeolite	50	in interstitial spaces and replacing phencrysts						

THIN SECTION LAB	EL ID: 3 0 S	68-U1502B-8R-1-W 49/51-TSB MS, FMZ	-TS35	Thin section no.: 35							
				Unit/subunit: VIb/2a							
Thin section sum	Thin section summary: Secondary minerals (dolomite/siderite, clay minerals, Fe-hydroxides) formed by hydrothermal alteration of basalt; mineral mound of not well consolidated matrix in between basalt clasts.										
Plane-polarized: 41708951 Cross-polarized: 41708971											
368 TS#35 U15928 8R-1 49-51											
Igneous Petrolo											
Lithology:	'9 9 brec	ciated basalt	iroundmass	arain cize (ava)·							
Tosturo:	biec		rain cizo dict								
Alteration											
Alteration intensity:	complete	e Total alteration (%): 100	Domain I	D (if >1): groundmass							
Alteration domain comment:	dolomite	and clay matrix with Fe-hydroxid	les								
Alteration mineral	Percent	Comments									
Calcium carbonate	50	dolomite									
Clay, smectite	25	partially replacing dolomite	partially replacing dolomite								
Clay, other	22										
FeOOH	3										
	V	esicle fill composition	Percent								
	C	lay, smectite	25								
			1	J							

THIN SECTION LABEL ID: Observer:

Thin section no.: 38

Unit/subunit: VIb/2a

Thin section summary:

Highly altered sparsely plagioclase-phyric basaltic clasts in lithified matrix of zeolite, dolomite, epidote and clay. Groundmass consists of felty plagioclase up to 0.6 mm long.

Plane-polarized: 41717701 Cross-polarized: 41717721

368-U1502B-9R-1-W 82/84-TSB-TS38

SMS, FMZ

Igneous Pe	etrolo	gy								
Lithology: sparsely plagioclase phyric basalt						yric basalt	Gr	oundmass gra	in size (avg.):	fine-grained
Texture:		in	terstitia	al			Gr	ain size distrib	oution:	equigranular
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	5	2	3	0.4	1.8	subhedral		tabular	some carlsbad twir	nning
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	60	30	30	0.1	0.6	euhedral		elongate	tightly interwoven, interstitial alteratio	felty plagioclase needles, with n minerals.
Igneous Pe	etrolo	gу								
Lithology:		br	recciate	d basal	t		Gr	oundmass gra	iin size (avg.):	
Texture:							Gr	ain size distrib	oution:	
[
Alteration										
Alteration inte	ensity:	high		Tota	laltera	tion (%): 9	90	Domain ID	(if >1): clas	st
Alteration dor comment:	Alteration domain higher interference colour alteration mineral: chlorite/actinolite/epidote?									
Alteration mine	eral	Percent	Со	mment	s					
Chlorite		30	30 replaces groundmass and plagioclase phenocrysts; is followed by calcite/dolomite and epidote							

Alteration										
Alteration intensity:	complete	Total alteration (%): 90 Domain ID (if >1): groundmass								
Alteration domain comment:	zeolite, do	zeolite, dolomite and clay								
Alteration mineral	Percent	Comments								
Calcium carbonate	45	dolomite								
Clay, other	50									
Quartz	5	vein								

THIN SECTIC Observer)n labe :	LABEL ID: 368-U1502B-10R-1-W 107/110-TSB-TS36 Thin section no.: 36 SMS									
		Unit/subunit: VIb/2a									
Thin section summary: Plagioclase-phyric basalt with large mm-sized plagioclase that are nearly constructed. Groundmass is transformed to clay and sericite beyond recognition original textures. Cut by quartz and carbonate veins.											
Plane-polarized: 41675181 Cross-polarized: 41675211								ross-polarized: 41675211			
368 T5#36 U1582B 18R-1 187-118-											
	- 1 1 -										
Igneous P	etroio	gy									
Lithology:		m ba	oderat asalt	ely plag	jioclase	phyric	Groundmass g	grain size (avg.): fine-grained			
Texture:		р	orphyri	tic			Grain size dist	ribution: bimodal			
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments			
Plagioclase	10	2	8	0.5	5	euhedral	equant	widely and nearly completely serificed			
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments			
Plagioclase								presumably plagioclase in the groundmass, but not longer recognizable, as completely altered (into clay?)			
Alteration											
]					
Calcium carboi	Alteration mineral Percent Comments Calcium carbonate 5 5										
Clay, smectite		50	m	ost of gr	roundm	hass altered to	o clay				
Soricito		30 all the plagioclase is at least partially, if not completely turned into sericite									

Percent

50

Vesicle fill composition

Clay, smectite

THIN SECTION LABEL ID: 368-U1502B-10R-CC-W 10/13-TSB-TS37 Observer:

SMS, FMZ, KAD

Thin section no.: 37

Unit/subunit: Vlb/2a

Thin section summary:

Very fine-grained, quench-textured, altered basalt cut by quartz and dolomite veins, with pyrite. Basalt 'clasts' being replaced by dolomite. Traces of epidote. Traces of sericite?



Igneous P	'etrolo	gy							
Lithology:		bi	asalt				Groundmass	grain size (avg.):	fine-grained
Texture:		in	terstitia	al			Grain size dis	tribution:	equigranular
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	2	1	1	0.5	1	euhedral	elongate		
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	80	30	50	0.2	0.4	euhedral	elongate	felty, tightly inter	woven, widely replaced
Fe-Ti oxide	5	0	5	0.01	0.05	subhedral	equant	replaced by Fe-hy	ydroxides
Texture:					ι 		Grain size dis	tribution:	
Alteration Alteration in	tensity:	compl	ete	Tota	al altera	ation (%): 90	Domain	ID (if >1): gr	roundmass
Alteration do comment:	omain	dolom	ite, qua	ırtz, littl	e calcit	e and abund:	ant pyrite anc	d clay minerals.	
Alteration mir	neral	Percent	Со	mment	,s				
Calcium carbo	onate	30	do	lomite					
Clay, other		50							
Quartz		10							

Sulfide, pyrite

10

in patches of singular grains. euhedral

Alteration							
Alteration intensity:	high	Total alteration (%):	90	Domain II	D (if >1): clast		
Alteration mineral	Percent	nt Comments					
Clay, smectite	50						
Sulfide, pyrite	2	euhedral sulfide grains in	some	basalt clasts			
	,	Vesicle fill composition		Percent			
		Clay, smectite		50			

e 01502 cole de	scriptio	115								iiiiii secu
THIN SECTION Observer:	N LABE	EL ID:	368-U FMZ	1502B	-12R-1	-W 83/86-T	SB-TS39	Thin s	ection no.:	39
								Unit/s	ubunit:	Vlb/2a
Thin section	on sum	mary:	Clast o dolom clay m dolom The rir	of fine- ite/side inerals ite/side ms aro	grained erite. C s, epido erite, re und the	d basalt in a lasts are hig te and oxid sidual plagi basalt clas	matrix of fine ghly altered, v es. Dolomite/ oclase, sulfid sts are domin	e crystalline, recrystal vith a matrix of plagio siderite domains con es (pyrite), clay mine ated by clay.	llised (triple clase laths, tain apart fr rals and min	junctions alteration om nor quart
		Plane-po	olarizec	l: 417	08421		С	cross-polarized: 417	08441	
	A States				368 TS. U1502 12R-1 83-85←	#39 B 			366 15#34 U15#29 12R-1 03-88+-6-	
Ineous Pe	trolo	gy ba	asalt				Groundmass	grain size (avg.): fir	ne-grained	
Texture:		in	terstitia	al			Grain size distribution: equigranular			
roundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments		
lagioclase	50	20	30	0.05	0.5	subhedral	elongate	some carlsbad twins an	d undulose ext	inction
e-Ti oxide	2	1	1	0.01	0.08	euhedral	equant			
jneous Pe Lithology: Texture:	trolo	gy br	ecciate	d basa	lt		Groundmass Grain size dist	grain size (avg.): tribution:		
Iteration										
Alteration inter	nsity:	high		Tota	al altera	tion (%): 90	Domain	ID (if >1): clast		
Iteration mine	nineral Percent Comments									
lay, other		50 most of groundmass altered to clay								
pidote		20	Lar inte	ge part erferen	t of mat ce colo	rix replaced ur: epidote g	by green/yello group minerals	ow minerals with high	(yellow-pink	-blue)
			euhedral sulfide grains							

Alteration										
Alteration intensity:	complete	Total alteration (%): 90 Domain ID (if >1): groundmass								
Alteration domain comment:	dolomite matrix, almost completely replaced basalt.									
Alteration mineral	Percent	Comments								
Calcium carbonate	80	dolomite								
Clay, other	15	around basalt clasts								
Sulfide, pyrite	1	euhedral sulfide grains								

THIN SECTION LABEL ID:	368-U1502B-12R-1-W 8 FM7	33/86-TSB-TS39	Thin section no.: 39						
Thin section summary: Clast of fine-grained basalt in a matrix of fine crystalline, recrystallised (triple junc dolomite/siderite. Clasts are highly altered, with a matrix of plagioclase laths, alte clay minerals, epidote and oxides. Dolomite/siderite domains contain apart from dolomite/siderite, residual plagioclase, sulfides (pyrite), clay minerals and minor or The rims around the basalt clasts are dominated by clay.									
Plane-	polarized: 41708421	Cross-polarized: 4170	08441						
Sediments and Sedi	mentary Rock								
Sample domain name: carb	onate matrix	Domain rel. abundance: 75							
Lithology: dolo	mite								
Framework grain ab	undance R=rare; Tr=trace								
Component	Rel. abundance	Component	Rel. abundance						
Quartz	R	Calcite (allogenic)							

Mica

Glauconite

Foraminifera

Undifferentiated calcareous bioclasts

C

С

Feldspar

Clay minerals

Lithic grains

Chert

THIN SECTION LABEL ID: Observer:	368-U1502B-14R-2-W 143 / SMS	146-TSB-TS40	Thin section no.: 40
			Unit/subunit: VIb/2b
Thin section summary:	Highly altered, highly porphy subequant plagioclase with mostly clay minerals, cross- clay minerals (+ epidote/chlo	vritic basalt. Large mm-sized eu partially glomeroporphyritic text cut by calcite and dolomite-rich prite?) in groundmass. Pyrite-in	whedral phenocrysts of tures. Highly altered with veins. Pervasive sericite and apregnated.
Plane-p	oolarized: 41708461	Cross-polarized	: 41708481
	368 TS#48 U1582B 14R-2 143-146←		264 15445 UNSR28 143-1464-

Igneous Pe	trolo	gy							
Lithology:		hi	ghly pla	agioclas	e phyr	ic basalt 🛛 🤆	iroundmass gra	in size (avg.): fine-grai	ned
Texture:		in	terstitia	al		G	irain size distrib	ution: seriate	
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	30	2	28	1	6	euhedral	subequant	abundant calsbad and albit twir	nning
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	30	2	28	0.5	1	subhedral	tabular	very difficult to recognize shape texture as much altered to clay	es or original

Alteration										
Alteration intensity:	high	Total alteration (%): 100 Domain ID (if >1):								
Alteration domain comment:	mostly cla	mostly clay minerals, some calcite or dolomite, sulfide impregnated								
Alteration mineral	Percent	Comments								
Calcium carbonate	5	3% dolomite, 2% calcite								
Clay, other	80	replaces most of groundmass and phenocrysts								
Sulfide, pyrite	2	euhedral sulfides grains in veins and phenocrysts								

THIN SECTION LABEL ID:	368-U1502B-15R-1-W 116/119-TSB-TS45	Thin section no.	.: 45
Observer:	SMS, FMZ		
		Unit/subunit:	Vlb/2b
Thin section summary:	Highly-moderately altered, highly plagioclase-phyric glomeroporphyritic textures. Plagioclase phenocrys subequant. May contain chlorite-rich pseudomorphs or opx?). Epidote, sulfides, sericite, chlorite (?) and phases.	coarse-grained basalt ts are euhedral and equ s after a ferromagnesian carbonate (?) common	with partly uant to n mineral (ol secondary

Plane-polarized: 41717781





Igneous Petrology

Lithology:	highly plagioclase phyric basal						Groundmass	grain size (avg.):	medium-grained		
Texture:	: porphyritic						Grain size distribution: inequigranular				
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments			
Plagioclase	60	40	20	0.25	7	euhedral	equant	sometimes glome or devitrified melt	sometimes glomeroporphyritic. potentially altered or devitrified melt inclusions in the PI phenocrysts		
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments			
Plagioclase	40	20	20	0.1	1	subhedral	tabular	tightly interwover the phenocrysts (i	n, in part outlining the margins of ndicating flow)		
Fe-Ti oxide	3	1	2	0.01	0.07	subhedral	equant	replaced by Fe-hy	droxides		

Alteration								
Alteration intensity:	moderate	Total alteration (%): 50 Domain ID (if >1):						
Alteration domain comment:	epidotite, and chlori	sulfide, and sericite/illite are dominant secondary phases. Possibly some carbonate ite						
Alteration mineral	Percent	nt Comments						
Clay, other	20	in groundmass						
Epidote	1	also replacing phenocrysts						
Sericite	20	most of the groundmass and in plagioclase						
Sulfide, pyrite	1	euhedral sulfide in various sized distributed throughout						

 THIN SECTION LABEL ID:
 368-U1502B-16R-1-W 105/108-TSB-TS41
 Thin section no.: 41

 Observer:
 SMS, KAD
 Unit/subunit:
 VIb/2b

 Thin section summary:
 Highly altered, sparsely plagioclase-phyric basalt with mm-sized elongate euhedral plagioclase phenocrysts. Groundmass mostly turned to clay. Quench textures with swallow tail plagioclase in the groundmass.

 Plane-polarized:
 41708501
 Cross-polarized:
 41708521



Igneous Pe	etrolo	gу							
Lithology:		sp	arsely p	olagiocl	ase ph	yric basalt	Groundmass	grain size (avg.):	fine-grained
Texture:	interstitial						Grain size dist	ribution:	bimodal
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	3	0.5	2.5	0.5	1	euhedral	tabular		
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	50	10	30	0.4	0.6	subhedral	elongate	tightly interwoven	1

Alteration									
Alteration intensity:	high	Total alteration (%): 75 Domain ID (if >1):							
Alteration domain comment:	mostly cla	mostly clay minerals, rare epidote, calcite, sulfide							
Alteration mineral	Percent	Comments							
Calcium carbonate	1								
Clay, other	74	replaces groundmass and phenocrysts							
Epidote	1	only 2 grains							
Sulfide, pyrite	2	euhedral sulfides grains in groundmass and phenocrysts							

THIN SECTION LABEL ID: Observer:	368-U1502B-18R-2-W 91/94- SMS, FMZ, KAD	TSB-TS42	: 42						
			Unit/subunit:	VIb/2b					
Thin section summary: Highly altered sparsely plagioclase-phyric basalt with originally (partially glassy rim with swallow-tail and bow-tie plagioclase and perlitic cracking secondary zeolitization in original glass rim and basalt. Groundmass ne overprinted by alteration (with epidote). Vein rich in pyrite.									
Plane-polarized: /1708001 Cross-polarized: /1700011									
	368 15444								



Igneous Petrology

Lithology:	sparsely plagioclase phyric basalt pillow lava flow						Gr	oundmass gra	in size (avg.):	fine-grained		
Texture:	hypocrystalline						Gr	ain size distrib	ution:	bimodal		
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments			
Plagioclase	2	1	1	0.3	5	euhedral		tabular	twinning			
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments			
Plagioclase	30	5	25	0.1	0.5	subhedral		tabular	most plagioclase is and only ghost text groundmass	mostly destroyed by alteration, ures are recognizable in		

Alteration

Alteration intensity:

high

Total alteration (%): 90 Domain ID (if >1):

Alteration mineral	Percent	Comments
Clay, other	40	may be present together with zeolite
Epidote	10	in groundmass
Sulfide, pyrite	4	euhedral sulfides concentrated in veins, or possibly pipe vesicles
Zeolite	50	replacing primarily glass rim, but also crystalline groundmass, but also phenocrysts in glass rim

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THIN SECTION LABEL ID:	368-U1502B-18R-4-W 76/78-TSB-TS43	Thin section no.:	43
Observer:	SMS, FMZ		
		Unit/subunit:	Vlb/2b
Thin section summary:	Pervasively altered moderately plagioclase-phyric basalt. subequant to tabular plagioclase phenocrysts sometimes appearance. Groundmass of tightly interwoven plagioclase chlorite and epidote (possibly clay minerals); chlorite vein by calcite and epidote veins.	Millimeter-sized lar with glomeroporph e. Secondary mine ing and impregnation	'ge yritic Irals are on followed

Cross-polarized: 41709051



Igneous Petrology

Lithology:	moderately plagioclase phyric basalt						Groundmass gra	ain size (avg.):	fine-grained	
Texture:	interstitial						Grain size distribution: bimodal			
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments		
Plagioclase	10	5	5	1	5	euhedral	tabular	carlsbad twinning;	sometimes glomeroporphyritic	
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments		
Plagioclase	50	25	25	0.1	0.9	euhedral	elongate	tightly interwoven		
Fe-Ti oxide	5	1	4	0.001	0.03	euhedral	equant	replaced by Fe-hyd	lroxides?	

Alteration							
Alteration intensity:	high	Total alteration (%): 65 Domain ID (if >1):					
Alteration domain comment:	chlorite, e	pidote, calcite, and possibly clay minerals, no sulfides					
Alteration mineral	Percent	Comments					
Calcium carbonate	2	calcite or dolomite					
Chlorite	30	replaces groundmass and plagioclase phenocrysts; is followed by calcite/dolomite and epidote					
Clay, other	30	replaces groundmass					
Epidote	5	grains along veins and in groundmass and phenocrysts					

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Veins and Halos	;				
Vein type:	compos	ite vein	Vein boundar	y: sharp	boundary or contact
Avg. thickness (cm):	0.1		Vein texture:	polyc	rystalline
		Vein fill com	position	Percentage	
		Calcium carl	oonate	60	
		Chlorite		45	
		Epidote		5	
Vein comments:	epidote	and calcite fo	llows chlorite		

THIN SECTION LABEL ID: 368-U1502B-19R-1-W 102/105-TSB-TS44 Thin section no.: 44 Observer: SMS, KAD Unit/subunit: Wi Thin section summary: Highly altered sparsely plagioclase-phyric basalt with pilon. Unit/subunit: Wi Thin section summary: Highly altered. Pilow rim highly altered with residual plagioclase. Secondary rare zeolite minerals, epidote and albite in veins, and clay minerals, pyrite and resphalerite. Plane-polarized: 41729371 Cross-polarized: 41729391 Image: plane-polarized: filosof filosof filosof Image: plane-polarized: 41729371 Cross-polarized: filosof Image: plane-polarized: filosof filosof filosof filosof Image: plane-polarized: filosof filosof filosof filosof filosof Image: plane-polarized: filosof										
Observer: SMS, KAD Unit/subunit: VII Thin section summary: Highly altered sparsely plagioclase-phyric basalt with pilowine. Basalt is silicifiation of the sphalerite. Silicifiation of the sphalerite. Silicifiation of the sphalerite. Plane-polarized: 41729371 Cross-polarized: 41729391 Image: sphalerite. Plane-polarized: 41729371 Cross-polarized: 41729391 Image: sphalerite. Size 1987 1987 1987 1987 Image: sphalerite. Size 1987 1987 1987 1987 1987 Image: sphalerite. Size 1987 Size 1987 1988 1988 1988 1988 <td></td>										
Thin section summary: Highly altered sparsely plagioclase-phyric basalt with pillow rim. Basalt is silicified in residual plagioclase. Secondary r are zeolite minerals, epidote and albite in veins, and clay minerals, pyrite and r sphalerite. Plane-polarized: 41729371 Cross-polarized: 41729391 Image: sphalerite. Plane-polarized: 41729371 Cross-polarized: 41729391 Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite. Image: sphalerite.	(-)									
Plane-polarized: 41729371 Cross-polarized: 41729391 Image: polarized: 41729371 Cross-polarized: 41729391 Image: polarized: 41729371 Image: polarized: 41729391 Image: polarized: polarized: 41729371 Image: polarized: 41729371 Image: polarized:	5/2b ed and ninerals inor									
Image: Sparsely plagioclase phyric basalt pillow lava flow Groundmass grain size (avg.): medium-grained Itthology: sparsely plagioclase phyric basalt pillow lava flow Groundmass grain size (avg.): medium-grained Texture: porphyritic Grain size distribution: medium-grained Phenocrysts Original Present (%) Register (%) Size Mize Magioclase 5 0.1 0.9 0.6 2 euhedral tabular only preserved in glassy rim Alteration intensity: high Total alteration (%): 90 Domain ID (ff>1): Alteration domain comment: epidote, zeolites (might have replaced chlorite), clay minerals, albite Alteration mineral Percent Comments comments distribution:										
Igneous Petrology Lithology: sparsely plagioclase phyric basalt pillow lava flow Groundmass grain size (avg.): medium-grained Texture: porphyritic Grain size distribution: Phenocrysts Original (%) Replaced (%) Replaced (%) Size (mm) Shape Habit Comments Plagioclase 5 0.1 0.9 0.6 2 euhedral tabular only preserved in glassy rim Alteration intensity: high Total alteration (%): 90 Domain ID (if >1): Alteration domain comment: epidote, zeolites (might have replaced chlorite), clay minerals, albite Alteration mineral Percent Comments										
Lithology: Sparsely platfoctase privic basait pillow lava flow Groundmass grain size (avg.): medium-grained Texture: porphyritic Grain size distribution: Phenocrysts Original (%) Present (%) Replaced (%) Size min. (mm) Shape max. (mm) Habit Comments Plagioclase 5 0.1 0.9 0.6 2 euhedral tabular only preserved in glassy rim Alteration intensity: high Total alteration (%): 90 Domain ID (if >1): Alteration domain comment: epidote, zeolites (might have replaced chlorite), clay minerals, albite Alteration mineral Percent Comments										
Texture: porphyritic Grain size distribution: Phenocrysts Original (%) Present (%) Replaced (%) Size (mm, mm, mm, mm, mm, mm, mm, mm, mm, mm										
Phenocrysts Original (%) Present (%) Replaced (%) Size min. (mm) Size max. (mm) Shape Habit Comments Plagioclase 5 0.1 0.9 0.6 2 euhedral tabular only preserved in glassy rim Alteration intensity: high Total alteration (%): 90 Domain ID (if >1): Alteration domain comment: epidote, zeolites (might have replaced chlorite), clay minerals, albite Alteration mineral Percent Comments										
Plagioclase 5 0.1 0.9 0.6 2 euhedral tabular only preserved in glassy rim Alteration Alteration intensity: high Total alteration (%): 90 Domain ID (if >1): Alteration domain comment: epidote, zeolites (might have replaced chlorite), clay minerals, albite Alteration mineral Percent Comments										
Alteration Alteration intensity: high Total alteration (%): 90 Domain ID (if >1): Alteration domain comment: epidote, zeolites (might have replaced chlorite), clay minerals, albite Alteration mineral Percent Comments										
Alteration mineral Percent Comments	Alteration Alteration intensity: high Total alteration (%): 90 Domain ID (if >1): Alteration domain comment: epidote, zeolites (might have replaced chlorite), clay minerals, albite									
Clay, other 50 replaces most of the fine-grained basalt										
Epidote 1										
Sulfide, pyrite 1										
Zeolite 5 in veins, maybe replacing chlorite										
Veins and Halos										
Vein type: dendritic vein Vein boundary: sharp boundary or contact										
Avg. thickness (cm): 0.05 Vein texture: polycrystalline										

THIN SECTION LABEL ID:368-U1502B-23R-2-W 65/67-PMAG_TSB-TSB-TS46Thin section no.: 45Observer:SMS, KAD									Thin section no.: 45	
Unit/subunit: VIb/2b									Unit/subunit: VIb/2b	
Thin section summary: Highly altered, sparsely plagioclase-phyric basalt. Groundmass of tightly interwove plagioclase laths. Abundant chlorite, epidote, zeolite, sericite, quartz replacing plagioclase phenocrysts, groundmass of plagioclase and interstitial spaces. Minor and chalcopyrite.									Imass of tightly interwoven cite, quartz replacing interstitial spaces. Minor pyrite	
Plane-polarized: 41729241 Cross-polarized: 41729271										
368 TS#46 U1502B 23R-2 65-67										
Igneous Po Lithology: Texture:	etrolo	gy sp	oarsely p terstitia	olagiocl	lase ph	yric basalt	Groundmass g Grain size dist	grain size (avg. ribution:	.): fine-grained inequigranular	
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments		
Plagioclase	1	0.2	0.8	0.4	1.2	euhedral	subequant	mostly replac minerals	ed by sericite, and other secondary	
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments		
		15	35	0.01	1	subhedral	elongate	tightly interw	201/00	
Plagioclase	50	15		0.01			-		oven	
Plagioclase Fe-Ti oxide	50	3	2	0.05	0.1	euhedral	subequant	replaced by F	e-hydroxides?	

Alteration mineral	Percent	Comments
Chlorite	15	replaces groundmass and phenocrysts
Epidote	2	
Quartz	2	
Sericite	5	
Sulfide, pyrite	1	
Zeolite	5	

THIN SECTIO Observer:	N LABE	EL ID:	368-U SMS	1502B	-24R-2	2-W 15/18-TS	B-TS47	Thi	n section no.:	47
								Uni	t/subunit:	Vlb/2b
Thin section	on sum	mary:	Highly residu altered and of	altered ally free d with a ther cla	d mode sh plao abunda y mine	erately plagioo gioclase phen int secondary erals.	clase-phyric b ocrysts with g minerals of c	asalt with large lomeroporphyrit arbonate, epidot	(> 5 mm), muc ic textures. Pe te, pyrite, seric	ch altered, ervasively cite, zeolite
		Plane-po	olarized	d: 417	29331		Cro	ss-polarized: 4	1729351	
A A A A A A A A A A A A A A A A A A A					368 U1 20	TS#47 502B 4R-2 5-18			553 TR U1605 248- 15-1	
Igneous Pe	etrolo	gy m ba	oderate asalt	ely plag	ioclase	phyric G	roundmass gra	ain size (avg.):	fine-grained	
Texture:		n	orohvri	tic		G	rain size distrik	oution:	bimodal	
	-1	porphyntic Grain size distribution: bimodal								
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments		
Plagioclase	4	1	3	1.2	8	subhedral	tabular	mostly replaced by	carbonate, epidote	and sericite
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments		
Plagioclase	50	15	35	0.3	1.2	subhedral	elongate	tightly interwoven		
Alteration Alteration inte Alteration don comment:	Alteration Alteration intensity: high Total alteration (%): 85 Domain ID (if >1): Alteration domain comment: carbonate, epidote, sericite, sulfide, zeolite, quartz									
Alteration mine	eral	Percent	Со	mment	s					
Calcium carbon	ate	2	cal	cite or o	dolomi	te				
Clay, other		10								
Epidote		2								
Quartz		1								
Sericite		5								
Sulfide, pyrite		2								

3

Zeolite

THIN SECTION LABEL ID: Observer:	368-U1502B-24R-3-W 94/97-TSB-TS48 FMZ, KAD	Thin section no.:	48
		Unit/subunit:	Vlb/2b
Thin section summary:	Highly altered (by epidote/chlorite and clay minerals) spa crosscut by hydrothermal vein/domain consisting of carb sulfides, surrounded by a halo of chlorite/epidote alteration phenocrysts are (sub)equant. Plag in the groundmass sh suggesting the groundmass was originally glassy. Relict confirms glassy groundmass. Sulfide is pyrite.	rsely plagioclase-pl onate, epidote, qua on. Sparse up to 3 r iow relict quench te perlitic cracking in (hyric basalt rtz and nm plag xtures groundmass



Igneous Petrology

Lithology:	sparsely plagioclase phyric basalt					yric basalt	Gr	oundmass gra	in size (avg.):	fine-grained
Texture:	interstitial						Gr	ain size distrib	oution:	inequigranular
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	10	4	6	0.5	5	euhedral		equant	Carlsbad twinning	
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	50	10	40	0.1	0.4	euhedral		elongate	tightly interwoven	
Fe-Ti oxide	5	0	5	0.01	0.03	subhedral		equant	replaced by Fe-hyd	roxides?

Igneous Petrology

Lithology:

sparsely plagioclase phyric basalt Groundmass grain size (avg.):

Cross-polarized: 41749271

Texture:

Grain size distribution:

Alteration

Alteration intensity:

high

Total alteration (%): 95

Domain ID (if >1):

Alteration domain comment:

epidote, chlorite, carbonate, clay-minerals

Quartz

Sulfide, pyrite

10

20

Alteration mineral	Percent	Comments				
Calcium carbonate	10	calcite or dolomite				
Chlorite	30	replaces groundmass				
Clay, other	30	replaces groundmass				
Epidote	30	close to the veins and as fine grained groundmass				
Alteration						
Alteration intensity:	complete	Total alteration (%): 95 Domain ID (if >1):				
Alteration intensity: Alteration domain comment:	complete epidote, s	Total alteration (%): 95 Domain ID (if >1): ulfide, carbonate, chlorite, silica				
Alteration intensity: Alteration domain comment: Alteration mineral	complete epidote, s Percent	Total alteration (%): 95 Domain ID (if >1): ulfide, carbonate, chlorite, silica Comments				
Alteration intensity: Alteration domain comment: Alteration mineral Calcium carbonate	complete epidote, s Percent 30	Total alteration (%): 95 Domain ID (if >1): ulfide, carbonate, chlorite, silica Comments calcite or dolomite				
Alteration intensity: Alteration domain comment: Alteration mineral Calcium carbonate Chlorite	complete epidote, s Percent 30 20	Total alteration (%): 95 Domain ID (if >1): ulfide, carbonate, chlorite, silica Comments calcite or dolomite forms a halo around the carbonate-sulfide-epidote vein				

loose crystals in the vein, and finer grained quartz vein

euhedral sulfides in vein, pyrite or sphalerite?

THIN SECTION LABEL ID: Observer:	368-U1502B-25R-3-W 100/103-TSB-TS49 SMS, KAD	Thin section no.:	49
		Unit/subunit:	Vlb/2b
Thin section summary:	Highly altered moderately plagioclase-phyric basalt with la residually fresh plagioclase phenocrysts with glomeroport altered with abundant secondary minerals of carbonate, e and other clay minerals. Cross-cut by epidote-rich vein wi pyrite. Possible pseudomorphs after olivine. Intersertal miclinopyroxene.	arge (> 5 mm), mu ohyritic textures. Pe pidote, pyrite, serie th quartz, carbona ineral was probably	ch altered, ervasively cite, zeolite te and y

Cross-polarized: 41749311



Igneous Petrology

Lithology:	moderately plagioclase phyric basalt					phyric	Groundmass gra	ain size (avg.):	fine-grained
Texture:		glomeroporphyritic					Grain size distrik	oution:	bimodal
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	7	2	5	1.2	6	euhedral	subequant	twinning, outlined	by plagioclase microliths
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	50	15	35	0.15	0.6	subhedral	elongate	tightly interwoven	

Alteration			
Alteration intensity:	high	Total alteration (%): 80	Domain ID (if >1):
Alteration domain comment:	carbonate, seri	cite, zeolite, chlorite (?), clay	minerals. sulfide, clay minerals, quartz

Alteration mineral	Percent	Comments			
Calcium carbonate	5	calcite or dolomite			
Chlorite	1				
Clay, other	30	replaces groundmass			
Quartz	3				
Sericite	10	replacing plagioclase			
Sulfide, pyrite	5	euhedral sulfide disseminated			
Zeolite	5				

Veins and Halos

Vein type:	compos	site vein	Vein bounda	ary:	sharp boundary or contact
Avg. thickness (cm):	0.02		Vein texture	:	polycrystalline
		Vein fill co	mposition	Percent	ntage
		Calcium ca	arbonate	5	
		Epidote		85	
		Quartz		1	
		Sulfide		1	
Vein comments:	epidote	(dominant),	carbonate (dolo	omite), sul	ulfides, quartz

THIN SECTION LABEL ID:	368-U1502B-28R-1-W 74/77-TSB-TS50	Thin section no.:	50
Observer:	RMK, FMZ		
		Unit/subunit:	Vlb/2b
Thin section summary:	Very fine-grained highly altered basalt, sparsely plagiocla replaced plagioclase phenocrysts within a groundmass fo clinozoisite, and opaque minerals. Larger chlorite crystals colors. Finer grains often indistinguishably interwoven wit filled with chlorite and epidote. Some thin carbonate veins	se-phyric. Some m rmed by plagioclas are pleochroic in p h clinozoisite. Vesio s cross-cut the thin	inor partially e, chlorite, pale green cles are section.

Plane-polarized: 41775351





Cross-polarized: 41775381

Igneous Petrology										
Lithology:		sp	oarsely p	olagiocl	ase ph	yric basalt	Gı	roundmass gra	in size (avg.):	fine-grained
Texture:	porphyritic						Gı	rain size distrib	ution:	bimodal
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	2	1.6	0.4	2	3	subhedral		tabular	Carlsbad and albite replaced by epidote	twinning common. Partially e.
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	40	20	20	0.05	0.3	subhedral		elongate	tightly interwoven	
Fe-Ti oxide	15	10	5	0.01	0.1	subhedral		equant	replaced by Fe-hyd	roxides?

Alteration					
Alteration intensity:	high	Total alteration (%): 80 Domain ID (if >1):			
Alteration domain comment:	groundma Crosscut b	ass altered to chlorite, clay minerals and epidote. Phenocrysts altered to epidote. by carbonate vein.			
Alteration mineral	Percent	Comments			
Calcium carbonate	1	in thin veins			
Chlorite	40	replaces groundmass			
Clay, other	49	replaces groundmass			
Epidote	5	replaces groundmass and phenocrysts			
FeOOH	5	in groundmass			

THIN SECTION LABEL ID:	368-U1502B-33R-1-W 131/134-T	SB-TS51 Thin section no.: 51		
Observer:	RMK, FMZ, KAD			
		Unit/subunit: VIb/2b		
Thin section summary:	ummary: Highly altered highly plagioclase phyric basalt. Groundmass consis green pleochroitic chlorite, plagioclase and opaque minerals (rare p porphyroclasts are partly replaced by epidote and other cryptocryst minerals. crosscut by carbonate vein. Regular areas with green alto be pseudomorphs after a ferromagnesian mineral.			
Plane-p	olarized: 41775401	Cross-polarized: 41775421		



Igneous Petrology

Lithology:		hi	ghly pla	agioclas	se phyr	ic basalt	Groundmass g	grain size (avg.):	fine-grained
Texture:		ро	orphyrit	ic			Grain size dist	ribution:	bimodal
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	20	15	5	0.5	5	euhedral	tabular	carlsbad and albite altered/devitrified phenocrysts	e twinning common. potentially melt inclusions in the
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments	
Plagioclase	50	30	20	0.1	0.9	subhedral	elongate	tightly interwover	l
Fe-Ti oxide	7	5	2	0.01	0.1	subhedral	equant	replaced by Fe-hy	droxides?

Alteration								
Alteration intensity:	high	Total alteration (%): 70 Domain ID (if >1):						
Alteration domain comment:	groundm Carbonate	ass altered to chlorite, clay minerals, epidote. Phenocrysts altered to epidote. e vein.						
Alteration mineral	Percent	Comments						
Calcium carbonate	1	in vein						
Chlorite	35	replaces groundmass						
Clay, other	49	replaces groundmass						
Epidote	10	replaces groundmass and phenocrysts						
FeOOH	5	in groundmass						

THIN SECTION	EL ID:	368-U1502B-34R-1-W 89/91-PMAG_TSB-TSB-TS52 Thin section no.: 52 FMZ									
								Unit/subunit: VIb/2b			
Thin sec	tion sum	mary:	Moderately plagioclase phyric basalt, moderately altered to chlorite, clay minerals and epidote. Crosscut by smaller veins of carbonate, epidote and chlorite. Plagioclase groundmass tightly interwoven with alteration minerals.								
		Plane-po	olarizec	l: 417	83071		C	cross-polarized: 41783091			
1				366 L 34	3 TS#52 115028 R-1 PM 39-914	AG	* prove and	268 75452 U15829 34R-1 PHAG 89-9144			
Igneous F Lithology: Texture:	etrolo	gy m ba	oderate asalt orphyrit	ely plag	ioclase	phyric	Groundmass Grain size dist	grain size (avg.): fine-grained t ribution: bimodal			
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments			
Plagioclase	10	3	7	0.5	5	euhedral	tabular	Carlsbad and albite twinning common. Minor zoning. Partially replaced by epidote and chlorite.			
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape	Habit	Comments			
Plagioclase	50	35	15	0.1	0.7	subhedral	elongate	tightly interwoven			
Fe-Ti oxide	10	5	5	0.01	0.05	subhedral	equant	replaced by Fe-hydroxides?			
Alteration Alteration intensity: moderate Total alteration (%): 60 Domain ID (if >1):											

Alteration domain groundmass altered by chlorine, clay minerals and epidote, phenocrysts by chlorine and epidote. Crosscut by carbonate, epidote and chlorine veins.

Alteration mineral	Percent	Comments			
Calcium carbonate	2	ו veins			
Chlorite	50	places groundmass, in veins			
Clay, other	40	replaces groundmass			
Epidote	3	replaces phenocrysts and in veins			
FeOOH	5	in groundmass			

 THIN SECTION LABEL ID:
 368-U1502B-37R-4-W 129/132-TSB-TS53
 Thin section no.: 53

 Observer:
 FMZ, KAD
 Unit/subunit:
 VIb/2b

 Thin section summary:
 Fine-grained, sparsely plagioclase phyric and glomeroporphyritic basalt. Moderately-highly altered by chlorite, epidote, clay minerals. Crosscut by carbonate vein. Quench textured plagioclase in the groundmass suggest it was originally glassy. Minor pyrite, chalcopyrite and sphalerite.

 Plane-polarized:
 41783131
 Cross-polarized:
 41783151

129-132←

Igneous Pe	trolo	gy								
Lithology:		sp	oarsely p	olagiocl	ase ph	yric basalt	Groundmass grain size (avg.):			fine-grained
Texture:	porphyritic							ain size distrib	bimodal	
Phenocrysts	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	2	1.6	0.4	0.5	3	subhedral		tabular	carlsbad twinning	common
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Shape		Habit	Comments	
Plagioclase	50	25	25	0.05	0.7	subhedral		elongate	tightly interwoven	
Fe-Ti oxide	7	5	2	0.005	0.02	subhedral		equant	replaced by Fe-hyc	lroxides?

Alteration								
Alteration intensity:	high	Total alteration (%): 70 Domain ID (if >1):						
Alteration domain comment:	groundma Crosscut k	ass altered by chlorite, epidote and clay minerals. Phenocrysts mostly by epidote. by carbonate vein.						
Alteration mineral	Percent	Comments						
Calcium carbonate	1	in vein						
Chlorite	40	replaces groundmass						
Clay, other	52	replaces groundmass						
Epidote	5	replaces groundmass and phenocrysts						
FeOOH	3	in groundmass						